

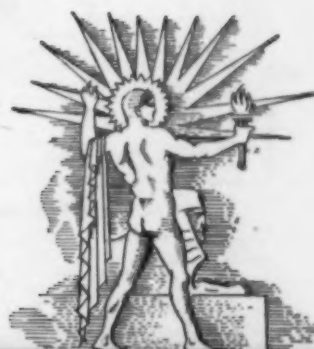
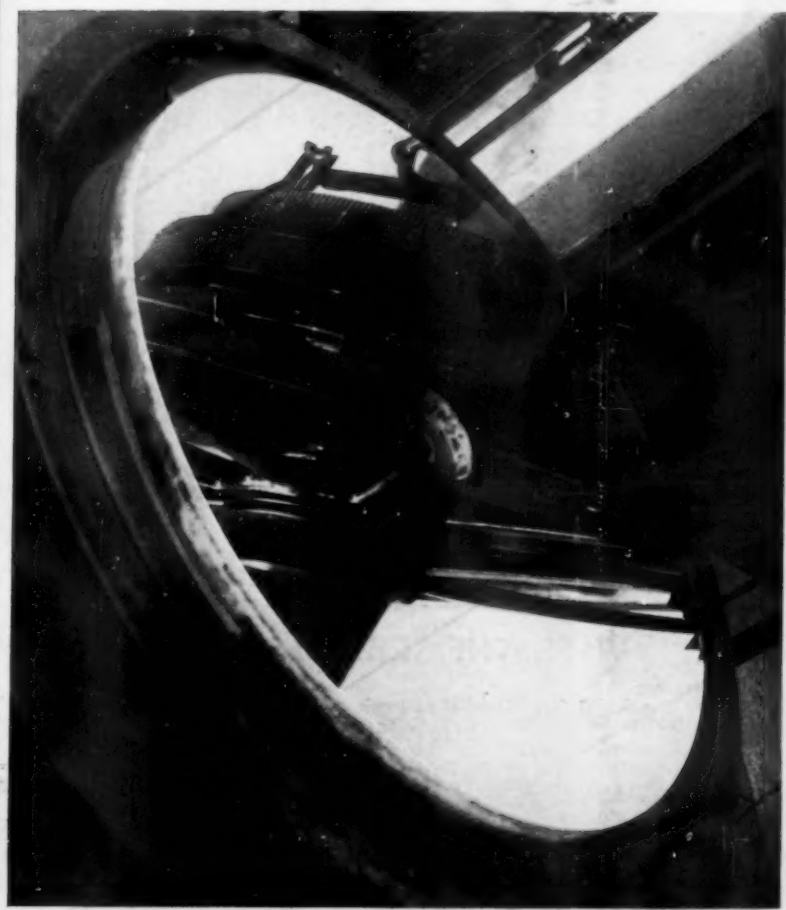
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# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE.



JULY 22, 1933

Looking Glass of Stars

See Page 56

A

SCIENCE SERVICE PUBLICATION

## SCIENCE NEWS LETTER

VOL. XXIV

No. 641

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Summary of Science

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## SCIENCE SERVICE

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## DO YOU KNOW?

An emerald weighing a carat is bigger than a diamond of the same weight.

The flintlock gun and the bayonet were both introduced to warfare in the seventeenth century.

A marble head of the Emperor Tiberius has been unearthed at the ruins of Paestum, near Naples.

The thick hide of an Indian rhinoceros looks as if it were laid on in big sections, like armor plate.

The chemical element caesium was not named for Julius Caesar but from the Greek word for sky blue.

Since 1840, the shore line of New Jersey has retreated at an average rate of a foot and a half a year.

England's royal air force has a new long-range bombing plane which carries a crew of ten and is equipped with six motors.

A health commissioner has said that the death rate in Chicago could be reduced one-sixth if smoke were eliminated from the city air.

A British air pilot recently observed what appeared to be ruins under the Mediterranean, and divers sent down found columns and walls of an old seaside town.

Ships have sailed entirely round the Antarctic continent just five times.

Whale meat, which tastes very much like beef, is a standard meat in Japan.

Proof that it is impossible to square the circle was published by a German mathematician in 1882.

Dyak girls express hero-worship by throwing fresh eggs at a head hunter returning with a trophy.

Despite their ability to haul heavy loads, elephants have a tendency to have weak hearts.

A firm of American architects has completed plans for a village of medium-priced homes on waterfront land in Devonshire, England.

A new kind of ice box has a fan between the ice and food compartments and is said to provide the efficiency of mechanical refrigeration at less cost.

The London Zoo has a new Gorilla House, which is divided into winter and summer apartments and has air conditioning apparatus.

When the gong sounds for roll call in the New York State prison at Attica, each man in his cell operates a button which lights a lamp back of his cell number in the keeper's office.

## WITH THE SCIENCES THIS WEEK

## ARCHAEOLOGY

Who is exhibiting the Monte Alban jewels in Chicago? p. 51.

## ASTRONOMY

What material is used in the Perkins Observatory large telescope mirror? p. 56. *Man and the Stars*—Harlan T. Stetson—McGraw-Hill, 1930, \$2.50.

## DERMATOLOGY

Is cold cream bad for the skin? p. 57. 1001 *Tests of Foods, Beverages and Toilet Accessories*—Harvey W. Wiley—Hearst's International Library Co., 1914, out of print.

## ETHNOLOGY

Who are the Croatians? p. 52.

## GENERAL SCIENCE

What was the idea behind the founding of Science Service? p. 62.  
What uses are specified for the public works funds allotted to scientific bureaus? p. 61.

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How did the little suckers survive the swift mountain streams of Virginia? p. 56.

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How is amyl nitrite administered as cyanide antidote? p. 55.  
Is susceptibility to cancer a dominant trait? p. 52.

What is the criterion of cancer cure in man? p. 51.

What is the outstanding symptom of hyper-insulinism? p. 57.

## MEDICINE—ARCHAEOLOGY

What children's disease is known to date back 4500 years? p. 56.

## MINING

In what Department is the U. S. Bureau of Mines located? p. 51. *Bureau of Mines—Brookings Institution, 1922, \$1.*

## PALEONTOLOGY

Is an ostrich anything like a dinosaur? p. 53. *The Origin of Birds*—Gerhard Heilmann—Appleton, 1927, \$7.50.

## PSYCHOLOGY

What form do insane delusions of grandeur commonly take? p. 54.

*These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in the United States.*

## MEDICINE

## British Anti-Cancer Serum Aids Human Patients

**"Encouraging Results" Reported When Injection Is Used On 25 Volunteers Previously Considered Doomed**

**"ENCOURAGING RESULTS"** in the treatment of 25 human cases of cancer with an anti-cancer serum were reported by Dr. Thomas Lumsden of the London Hospital at the annual meeting of the British Empire Cancer Campaign.

Twenty-five victims of this dread disease volunteered to undergo the serum treatment which Dr. Lumsden has been working on for more than seven years. They were suffering from cancers which had recurred after the original tumors had been treated by surgery or radium. Their condition was diagnosed as hopeless by physicians.

Each of these volunteers had some of the serum injected into the main mass of his cancer or into the artery leading to it. Dr. Lumsden reported that the results in these cases were so encouraging as to justify "intensive pursuit of the method," although he considers the work still in the experimental stage.

The chief difficulties with the treatment are achieving distribution of the

serum throughout the tumor and keeping it localized in the tumor area long enough for it to produce results.

In these human cases, Dr. Lumsden used only one fraction of the anti-serum which he has been developing. This fraction, called the euglobulin fraction, gives a solution of anticancer bodies ten times as strong as the anti-serum as a whole. In other words, it is ten times as potent a weapon for treating the disease.

The serum not only cured spontaneous cancers in mice but prevented the recurrence of such cancers in seventy-five per cent. of the animals. Some of these mice are now living a year after the injection of the anti-serum. The fact that one year of life for mice corresponds roughly to thirty years of life for man gives an idea of the effectiveness of this method of treatment. Five years of freedom from the disease is considered the criterion for cure of cancer in man.

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**GOLDEN MASK**

*This gold mask from the treasure tomb of Monte Alban represents the most gruesome of Mexican gods, Xipe, god of the flayed. In ancient Indian rites to the honor of this god, a woman was beheaded and her skin became the dress worn by a ritual dancer. The mask is among the Monte Alban jewels exhibited at the Chicago Century of Progress Exposition.*

Some are being abolished entirely; all will have the scope of their activities curtailed.

The health division of the Bureau is being abolished, and the officers who have been assigned there from the Public Health Service are being returned to the Service. The helium division is being merged with the petroleum and natural gas division.

The offices of the Bureau have been quietly moved from the new Commerce Department building to the building of the Interior Department. Officials of the Bureau said in answer to inquiry that they have not been informed of any actual transfer of the Bureau to the Interior Department, however. In the office of Secretary Roper it was said that the transfer is expected soon.

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## ARCHAEOLOGY

## Mexican Treasure-Jewels Displayed In Chicago

**THE SPLENDOR** of Mexico's departed princes is added to the other wonders of Chicago's Century of Progress Exposition with the opening of the special treasure car containing the famous Monte Alban jewels. The

## MINING

## Bureau of Mines to Lose Fourth of Personnel

**A**NOTHER SCIENTIFIC bureau of the Federal Government suffered on July 15 when economy edict cut off practically one-fourth of the personnel in the U. S. Bureau of Mines.

About 190 to 200 employees received notice that they would be separated from the service on July 15 provided the Civil Service Commission approves. In case the Commission fails to act the employees will be placed upon indefinite furlough. This means that from 25 to 30 per cent. of the present staff of the Bureau is being dismissed from the Government service. About 70 of those fired are scientific or technical person-

nel, it was said. Although the separations are effective on July 15, it was stated at the Civil Service Commission that the list had not been received by them until that date.

The dismissals were made necessary by a drastic reduction in funds. Of the \$1,514,300 appropriated by Congress for the Bureau of Mines, \$414,300 has been withheld by the Secretary of Commerce, who allotted but \$1,100,000 to the Bureau for the coming fiscal year. This is a 27.3 per cent. reduction in funds.

All field offices and stations of the Bureau are affected by this drastic cut.



treasure, one of the most outstanding archaeological finds of the world, has been permitted to come to the United States by special act of the Mexican government.

Thousands of persons have been inquiring for the Mexican presidential train, of which the treasure car is a part and as soon as it was opened they thronged through its aisle marvelling at the beautiful and intricate prehistoric Mexican workmanship, expressed in gold, jade, turquoise, coral, pearls and red shell. The many scores of pieces are displayed in twenty-one large glass cases.

Accompanying the exhibit is Dr. Alfonso Caso, explorer of the famous tomb in Oaxaca where this treasure was found associated with the skeletons of nine Indians of an unknown nation. Only the richness and superb workmanship of the jewels certifies to the high position of their wearers in church and state of ancient Mexico.

With Dr. Caso are Senora Caso and Senor Daniel de la Borbolla. The latter, fluent in English and well acquainted with American ways, is Dr. Caso's "contact" with the American public, since Dr. Caso speaks little English and has not been in this country before, although he has traveled in Europe.

Another valued member of the party is Martin Bazin, a native of the high Mixteca. Broad-shouldered, rather short, lithe and silent in his movements, he is the jewels' watchdog. The guards in and around the car, and the detectives who doubtless mingle with the crowd, would seem to be superfluous when he is around.

The value of the Monte Alban treasure is a paradox. It simply has no price, from the artistic and archaeological point of view. Yet if a gang of thieves should conceivably break through all the safeguards with which the car has been surrounded since it left Mexico City and steal the entire lot, they would find that they had but small reward for their pains. All the gold used in all the ornaments sums up to an estimated weight of but eight pounds. Some of the pearls are large—one weighs twenty-three carats—but they are all pierced and so of no value for modern jewelry.

The real value of the jewels lies in their beauty and their mysterious antiquity.

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#### MEDICINE

## Cancer Susceptibility Depends on Single Gene

**J**UST ONE GENE in the germ cells from which you grew—an almost infinitesimal thing about the size of one molecule—determined whether or not you are susceptible to cancer.

For it is that tiny, single unit among the many complex factors of heredity that makes the difference between cancer susceptibility and cancer insusceptibility, Maud Slye of the Sprague Memorial Institute and the University of Chicago has found.

The scientific research from which Miss Slye draws this conclusion is reported in the American Journal of Cancer. Her studies on cancer inheritance have been carried on for twenty-three years and involve over 116,000 autopsies.

Because of the difficulty of obtaining records of many human generations, Miss Slye has made her studies on generations of mice, which develop cancer just as men and women do.

Heredity alone is not the cause of cancer, Miss Slye points out. But through heredity a susceptible soil is prepared, she finds.

"An external factor acting with in-

ternal factors upon a susceptible soil is probably the cause of cancer," she stated in her report.

Prolonged irritation may be an external factor. Internal factors may have to do with function or faulty function of the endocrine glands or with other physiological conditions.

Another fact brought out by Miss Slye's studies is that insusceptibility to cancer is a dominant factor, while susceptibility to cancer is what is known to students of genetics as a recessive. This means, according to Mendel's law, that if a cancer susceptible mates with an insusceptible, their offspring will inherit the dominant trait of insusceptibility. In the next generation, however, one-quarter of the offspring will show the recessive trait of susceptibility.

However, such perfect genetic ratios cannot be expected except as relatively rare occurrences, Miss Slye stated. In the case of cancer it is probabilities, not certainties, that are dealt with. Age and many other factors enter into the situation and may interfere with or obscure the genetic picture.

*Science News Letter, July 22, 1933*

#### ETHNOLOGY

## Study of Croatans Reveals No Link with Lost Colony

**T**HE ROMANTIC story that Sir Walter Raleigh's ill-fated colony on Roanoke Island survives today in the blood of the so-called Croatans has been dealt a new blow by science.

A study of these Croatans, 8,000 mixed whites and Indians who live mainly in Robeson County, North Carolina, has been made by Dr. John R. Swanton of the Smithsonian Institution. Dr. Swanton is an outstanding authority on Indians of the Southeastern states.

While labeling his conclusions tentative, Dr. Swanton says that the evidence strongly indicates that these mysterious North Carolinians belong predominantly to the Siouan racial stock. They have some white blood, but Dr. Swanton

finds no reason to believe that they have any connection with the lost colony established by Sir Walter Raleigh.

The Croatans have been a puzzle to census takers and other officials who have had to classify them. They have been recently called Cherokee Indians, and distant relatives of the Iroquois group. Dr. Swanton connects them most closely with the Cheraw Indians, a tribe of Sioux stock.

The name Croatan was given them through influence of Hamilton MacMillan of Fayetteville, North Carolina, in support of his hypothesis that they were descendants of the lost colonists. Croatan was the name of an island and

an Algonquin Indian town to which the survivors of the Raleigh colony were supposed to have gone. White, who visited Roanoke Island in 1590 found no trace of the luckless colonists except this name Croatan carved on a tree. From that clue the theories have been evolved.

The Croatans themselves, now farmers who make a fair living and send their children to school, can tell very little of their ancestry. They speak only English, and have entirely forgotten Indian speech which might aid in establishing their identity.

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#### ZOOLOGY

### Pronghorn Triplets Born In Yellowstone Park

**T**HREE ANTELOPE babies are following one mother in Yellowstone National Park.

A ranger traveling off the beaten trail in the Lamar valley scared up out of its hiding place a tiny antelope. It took off at a great pace across rocks and sagebrush and was almost immediately joined by a mother and two other babies. There were no other adult pronghorns in sight and it is reasonable to suppose the trio belonged to one mother.

It is an interesting fact that antelope at birth and for some time thereafter have no body odor. A Yellowstone ranger recently had occasion to check this statement. A little pronghorn, less than six hours old, was found and handled. No trace of odor could be detected. Adult antelope have a very pungent and characteristic odor and this can easily be detected by anyone with a keen olfactory sense even from a distance. Absence of odor in the young, until they are able to escape from their enemies by their natural fleetness of foot, is a real example of natural protection.

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Among the palace treasures of Persia is mentioned a ten million dollar globe on which the seas are made of emeralds, countries are of rubies and other stones, and the frame is of gold crusted with diamonds.

A geologist points to the need of a durable, transparent waterproofing substance to protect Greek temples and other famous stone ruins from the disintegrative action of water.

#### PALEONTOLOGY

## Find Eggs That Were Fresh A Million Years Ago

**Huge Fossils More Than Six Inches Long With Shells An Eighth of an Inch Thick Were Laid by Extinct Ostrich**

**E**GGs laid by giant ostriches in drifting desert sands approximately a million years ago are being discovered in several regions of China. Eggs or fragments of eggs have been found at 21 localities, representing perhaps as many nesting areas of the fossil birds. The fossil eggs are of gigantic size, the largest being a little more than 6 inches long, or nearly  $1\frac{3}{4}$  inches greater in their long diameter and  $3\frac{1}{4}$  inches greater in girth than those laid by the ostrich of the present day. Not only are these fossil eggs much larger than any laid by the living species, but they also had much thicker shells, those laid by the early species in the oldest strata having been found to have a thickness as great as 2.7 millimeters—that is, a little less than one-eighth of an inch. It would certainly have taken some nerve on the part of the egg epicurean of that day to crack the shell of that egg on his breakfast table.

The ostrich living today is found wild in areas scattered from South Africa to Arabia. The extinct species which laid the eggs now attracting so much attention from geologists and paleontologists roamed over the oases and sands of eastern Asia in the day when the early loess was drifted about by desert winds and caught in the damp basins of vagrant lakes. Doubtless these great ostriches raced with the three-toed horses of that day, for both the bird and the progenitor of the later and fewer-toed horse were buried together in what geologists call the Hipparion red clays, and these date from about a million years ago.

Most of the fossil eggs were broken before burial, but two specimens are said to be in fine state of preservation, whatever that may mean—possibly a matter of taste, after all.

It is a curious coincidence that Chinese paleontologists, who now are finding the eggs of ostriches buried many hundreds of thousands of years ago, are of the same race and country to which we owe the art of preservation of eggs

by burial for long periods in the ground. Dried eggs have long been a product commercially exported from China. It is possible to dine in New Jersey and eat eggs dried by the Chinese. They are sometimes used instead of the fruit of our own native hen in the concoction of ice cream. What an egg-eating marathon might have been staged had there been some good American citizens scattered around those alkaline lakes in the ancient days of Struthio Anderssoni and the three-toed horse.

The fossil ostrich eggs, which are being discovered in China where modern streams have cut down into the deeply buried strata of wind-blown dust and clay, are much larger than the dinosaur eggs found by Roy Chapman Andrews and the American Museum of Natural History exploration party in Mongolia several years ago; but, on the other hand, they are not nearly so old by many millions of years. After all, when one stops to think of it, it is not a very far cry from a dinosaur to the ostrich, for the dinosaur comes close to being a lizard. So does the ostrich as it is a sort of feathered, toothless lizard. If you do not believe it, study the bird carefully and without prejudice after removing his feathers.

Since the ostrich which laid the giant eggs in the Chinese desert disappeared from the earth long ago, there have been several other large birds which have become extinct. Some of these have disappeared within the limit of human history. One, known as the Aepyornis, which lived in Madagascar until about 1,000 years ago, was a colossal bird, about 7 feet in height. Her eggs were considerably larger than those of any ostrich, past or present, being about one foot in length. Another famous bird was the Moa, of New Zealand, which was exterminated by the native Maori about 500 years ago. The egg of the Moa had a girth of about 6 inches, whereas the major girth of the eggs laid by the Chinese fossil ostrich was of the order of 18 inches.

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## PSYCHOLOGY

# Teach Children to Admit Defeat

## Modern Psychologist Says that Cardinal Richelieu's Percept, If Followed, Leads to Insanity

By JANE STAFFORD

**C**ARDINAL RICHELIEU was wrong. At least, he was wrong if he actually said the famous lines which Lord Bulwer-Lytton wrote for him in his play, *Richelieu*.

You remember the scene in which the crafty old Cardinal sends his young page, Francois, on a hazardous diplomatic mission. The young Francois, before setting out, asks what will happen if he fails. Then the Cardinal, according to Bulwer-Lytton, gives the much-quoted answer:

"In the lexicon of youth, which Fate reserves for a bright manhood, there is no such word as—*fail!*"

School children have been brought up on this noble maxim for nearly a hundred years. It has found its way into copy books and school readers, vieing with Longfellow's poem, *Excelsior*, as an inspiration to a successful life.

But now it seems that this idea that you must succeed in life is not such a laudable guiding star after all. A considerable percentage of the graduating class, if you think it over, are fated never to make a million dollars or to marry the boss' daughter.

Instead of teaching children that there is no such word as fail, they should be taught to admit the possibility of defeat, say scientific educators of today. They even add that a firm belief in the never-say-fail spirit of the old Cardinal's words in the play has led many a man and woman to the insane asylum.

This may surprise you if you have been brought up according to the old traditions. Even today the ideal of ultimate success is instilled in every school child, says Mandel Sherman, University of Chicago psychologist.

"Every school child feels he must be a successful individual, a champion. He must get the highest marks in the class. Or he must be a ball-playing champion, a second Babe Ruth. Or if he can't be that, he must be a spelling champion, an egg-eating champion, or a tree-sitter."

This is all wrong, according to Dr.

Sherman. It causes many avoidable conflicts in the youth's life and if continued into adulthood, it may result in mental breakdown.

Dr. Sherman in collaboration with Dr. Irene Sherman, has been studying the delusions of insane people, trying to learn from them the conflicts which produced mental breakdown. Their chief difficulty seems to have been that they never learned to accept reality and the possibility of defeat.

To a man of this type, for example, owning a fine car may spell success. Perhaps he cannot get the car honestly, but since he will not accept defeat, he goes so far as to steal it. He has not learned to accept the possibility that he may never own a fine car.

"It is just as vital to the man who steals the car to own that car as food is vital to the man who steals bread," Dr. Sherman explained.

### Cannot Do Without

The starving man steals bread because he cannot exist without it. Another man with a delusion of grandeur steals a fine car because he cannot exist, emotionally, without it. Doing without the car would mean defeat, which he has never learned to accept.

"You can read in the delusions of people the frustrations and strains that have figured in their lives," said Dr. Sherman.

If the psychologists and psychiatrists can find which of these stresses and strains produce mental disease, they will be able to take more specific steps in the prevention of mental breakdown.

The first step at present seems to be to teach the young child to expect and to accept defeat. Dr. Sherman's experimental work has shown him that in this way many conflicts can be avoided in the school boy or girl. Much harm is done to the emotional stability of children by teaching them that success is the only goal and that defeat is a sign of personal failure.

"In the process of growth and development every child meets conditions which offer a severe challenge to his

emotional balance. The intensity of the child in his attempt to be successful in every situation, whether the outcome is worthwhile or not, results in emotional tension and frequently in the development of a neurotic condition."

Dr. Sherman would give prizes to children for beating their own records and not for standing highest in the group. He would give school marks or grades an entirely new meaning.

"Awarding of prizes is one of the greatest sources of conflict in students," he said. "I don't believe marks or grades should be given in terms of how much better or worse a child is than other children."

"The marks should be given on the system that marks of 80 mean that the child has worked only to 80 per cent. of his ability. The marks will be in terms of the child's own ability, in terms of what he should be able to do. That will relieve the child of the competitive strain."

"We feel that the education of the young child must be purely education in self-understanding."

In other words, the young child should be taught to know his own abilities, and to recognize his shortcomings and limitations. He must learn that he cannot always succeed, but that if he fails to become a champion, it is no disgrace so long as he has worked to the best of his ability.

Dr. Sherman would have the young child taught applied psychology. It would be a course of study just like reading and arithmetic.

"We think we can teach the child of seven or eight years psychological facts which will enable him to manage his own small affairs much better. As soon as a child knows what temper tantrums are, he won't have them."

"Children who come to the psychiatrist are taught to overcome the troubles they have. It would be better to prevent those troubles by teaching normal children what they are and what causes them."

"If money is the source of the child's difficulty, he should be given a better idea of money."

Money should be taken as a cultural problem rather than as a problem of social status, in Dr. Sherman's opinion. He found that money is one of the most



frequent delusions among white people suffering from mental disease.

In his study of insane people, he investigated the relation between the types of mental disease and the economic, social status of the patients and their race, nationality and sex. For this purpose he studied the records of several hundred patients admitted to the Cook County Psychopathic Hospital of Chicago and the Chicago State Hospital.

### Money and Religion

He found the most prevalent forms of delusions of grandeur in both negro and white patients refer to money and religion. These delusions concerning money are twice as common among Americans as foreign born patients. The latter are more likely to have delusions concerning professional or religious power. This shows that the ideal of success instilled into American children concerns money.

But piling up money is a sign of success which not every one can achieve. Neither can every European child achieve success in religious or professional fields. To many of those who are destined to failure, the goal becomes so important that they lose sight of everything else, Dr. Sherman explained. No longer able to recognize or face reality, they suffer mental breakdown of a form which makes them see themselves as second Rockefellers or Victor Hugos or they believe they have a mission to save the world. A few Americans, 9 per cent. of the patients Dr. Sherman studied, might fancy themselves second Edisons, but no such grandiose delusions concerning inventions were found in the foreign born.

### Negroes as Benefactors

Among negroes, delusions of superiority in literary and educational fields were found to be a close third to those concerning money and religion, but were relatively infrequent in the whites. An interesting finding was that many of the negroes who had grandiose delusions concerning money, saw themselves as benefactors of their race. They would, in their fancy, acquire huge sums to found schools. The white patients whose grandiose delusions ran to money were concerned with it as a means to social or business achievement.

Dr. Sherman found that college graduates had more delusions of grandeur than persons who had never attended college. This he attributes to four more years of following the Bulwer-Lytton-

Richelieu maxim, Never say fail, or to four more years of emphasis on football champions, honor societies and prom leaderships.

Among white people a man who loses his sense of the world's realities is twice as apt to consider himself a grand and important figure as a woman. But among negroes, the women are just as apt as the men to see themselves as prominent or powerful personages.

White men who found competition for success in the world too much for them most commonly delude themselves into thinking they were powerful and successful financiers or business men. On the other hand, Dr. Sherman did not find a single white woman among the patients he studied in these mental disease hospitals who considered herself a second Hetty Green. Instead the women who failed, though they did not realize it, sought escape from disappointing reality in delusions of a religious nature, comforting themselves with the idea that they were Joan of Arc types, perhaps.

### Control of Others

Among other delusions of grandeur with which people who have failed sometimes comfort themselves in an unreal world, are ideas that they can control other people through hypnotism or through electricity emanating from their bodies.

Servants and laborers are less apt to have these delusions of grandeur than persons higher up in the social scale.

### MEDICINE

## Heart Stimulant Effective As Cyanide Antidote

**A**MYL NITRITE, well-known heart stimulant, is a better antidote in cyanide poisoning than the dye, methylene blue, it appears from experiments reported to The Journal of the American Medical Association by Drs. K. K. Chen and G. H. A. Clowes and Charles L. Rose of Indianapolis.

These experiments indicate that amyl nitrite is at least twice as efficient an antidote to cyanide as the blue dye. It is also more easily given, since it may be administered by inhalation while the dye must be injected by hypodermic.

The blue dye has recently been used with success in treating cases of both



### PSYCHOLOGICAL ERROR

Scene from Bulwer-Lytton's play, Richelieu—on the left is Francois, to whom the Cardinal makes the oft-quoted remark "In the lexicon of youth—there is no such word as fail"—Dr. Mandel Sherman, modern psychologist, says he was wrong.

These findings, Dr. Sherman hopes, will give mental hygienists clues to what stresses in childhood lead to mental breakdown in adulthood. The mental hygienist, who tries to prevent mental breakdown, can take more practical steps in this direction by following these clues and relieving the strains they indicate in the life of the child.

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cyanide and carbon monoxide poisoning and has become the subject of considerable scientific discussion.

The Indianapolis scientists started their investigations on amyl nitrite following reports of Dr. E. Hug and Dr. W. B. Wendel. The former showed that sodium nitrite was a better antidote for cyanide than methylene blue, and both Dr. Hug and Dr. Wendel, working independently, came to the conclusion that methylene blue neutralizes the effect of the poison by forming the compound, cyanmethemoglobin.

Science News Letter, July 22, 1933

## ASTRONOMY

**Perkins Observatory 69-Inch Mirror is Third Largest**

See Front Cover

**T**HIRD largest in the world and the first all-American giant telescope, the 69-inch telescope of Perkins Observatory of Ohio Wesleyan University is now in operation.

When its mirror was being placed in position just after being coated with silver, the unusual photograph on this week's cover was taken. Where star images are captured when the mirror is in its mounting, there may be seen reflected a portion of the graduated circles of the telescope's mounting.

Dr. Harlan T. Stetson is director of Perkins Observatory.

The mirror is the first large telescope disc to be made in America. It was cast of high quality boro-silicate optical glass at the U. S. Bureau of Standards at Washington and it was ground, figured and polished at the factory of J. W. Fecker Company, Pittsburgh, Pa. Warner and Swasey Company of Cleveland made the mounting.

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## SEISMOLOGY

**Five Earthquakes Shake The World**

**F**IVE world-shaking earthquakes in two days was the unusual record for the week-end, July 8 and 9.

Two of these earthquakes were centered in the same location, in the Pacific ocean off the Mexican coast in the region of Colima in the State of Jalisco.

The three other quakes registered on seismographs throughout the world were centered in the region of the island of Urup, near the southern end of Japan's Kurile Islands.

Because these earth disturbances were located in areas where there is little land, probably little or no damage was done.

Their locations were determined through use of seismological telegrams sent to Science Service by leading earthquake stations and interpreted by experts of the U. S. Coast and Geodetic Survey.

The two shocks off the Mexican coast occurred at 34.6 minutes after midnight and 10:21.5 p. m., Eastern Standard Time, July 9. The longitude-latitude was 105 West and 17 North.

The Japanese earthquakes occurred at 8:30 p. m. Eastern Standard Time, July 8, and 4:28.1 a. m. and 7:30.5 a. m., Eastern Standard Time, July 9 at 45 north latitude and 151 east longitude.

Seismological stations reporting included: Jesuit Seismological Association stations at Georgetown University, Washington, D. C., St. Louis University, St. Louis, Mo.; the Dominion Observatory, Ottawa; the University of Michigan, Ann Arbor, Mich.; the University of Wisconsin, Madison, Wis.; the Seismological Observatory, Pasadena, Calif.; San Juan Magnetic Observatory, San Juan, Puerto Rico; U. S. Coast and Geodetic Survey stations at Sitka, Alaska, Tucson, Ariz., Chicago, and Honolulu, T. H.

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## MEDICINE-ARCHAEOLOGY

**Children 4500 Years Ago Had Infantile Paralysis**

**C**HILDREN of Egypt 4500 years ago suffered from infantile paralysis. Evidence of this is found by Dr. John Ruhrah of the Johns Hopkins University, Baltimore, in a skeleton now in the Museum of the University of Pennsylvania.

This skeleton dates back to 2600 B. C., which is far earlier than the date of the Egyptian relief of Ruma now in Copenhagen which so vividly shows the ravages of infantile paralysis. This goes back only to the nineteenth dynasty, about the thirteenth century, B. C.

The story of Dr. Ruhrah's discovery is in itself in the nature of an epic on archaeology and medicine. The skeleton was found by Sir Flinders Petrie in Egypt in 1897 and sent to the University Museum. This skeleton attracted interest because it was found with a walking stick or cane and because one thighbone was found to be five centimeters shorter than the other.

At first it was thought his was merely a fracture that had joined up short, this not being uncommon in old skeletons, since the ancients were not particularly proficient in setting broken bones.

Dr. Ruhrah, searching for materials on infantile paralysis happened to read a medical article about this skeleton and arranged to study it. He finds no evidence of fracture, and concludes that infantile paralysis existed in Egypt 4500 years ago.

*Science News Letter, July 22, 1933***IN SCIENCE**

## ICHTHYOLOGY

**Fish That Can't Float Found In Virginia Stream**

**A**FISH that can't float and doesn't want to float lives in the headwaters of the James River in Virginia.

Specimens of this strange fish, believed to exist only in this one corner of the earth, have been secured by E. D. Reid, Smithsonian Institution biologist. Previous to Mr. Reid's collection, this fish has been taken only three times since its discovery in 1896.

The little fish, which belongs to the sucker family, has no air bladder and consequently cannot float like most fishes. It can only sink to the bottom or keep swimming. But this is no crippling handicap for the little sucker. It had to rid itself of the air bladder, in the course of evolution, or it would have gone the way of extinct fishes. The mountain streams that pour into the James River are so swift that the little suckers had to stay at the bottom or be washed away. They rid themselves of their "water-wings" and survived.

*Science News Letter, July 22, 1933*

## ARCHAEOLOGY

**Start Excavating Great Aztec Temple in Mexico**

**G**OVERNMENT archaeologists have begun excavating the most important site of Aztec grandeur in old Mexico City. The site, which now adjoins a Christian cathedral, was once dominated by the greatest of the Aztec temples in the old capital.

When the Spanish conquerors first came to Mexico they found the Aztec capital a beautiful Venetian-type city, built in a lake with many causeways and canals and impressive temples and other public buildings.

The chief Aztec temple will be excavated under the supervision of Eduardo Noguero, well-known Mexican archaeologist.

*Science News Letter, July 22, 1933*



# EN FIELDS

## CHEMISTRY

### \$50,000 Needed to Aid Unemployed Chemists

OVER \$50,000 will be needed by New York's Committee on Unemployment and Relief of Chemists and Chemical Engineers to take care of some 155 neediest cases during the next six months before recovery in business is expected to bring definite technical re-employment and ease the critical situation.

Because the New York City Emergency Work Bureau is curtailing its activities and leaving practically all the burden of taking care of the unemployed chemists to the emergency committee organized under the sponsorship of chemical societies of the New York area, the committee has issued an urgent appeal to the chemical profession for contributions.

Of 935 unemployed chemists registered, 305 are distress cases.

*Science News Letter, July 22, 1933*

## DERMATOLOGY

### Cosmetics Defended By Woman Physician

COSMETICS have found a new defender in an English woman physician.

Dr. A. Carleton has investigated them and as a result has a good word to say for the cold creams and vanishing creams which continue to be used by women the world over despite the frequent condemnations by "mere male" doctors. Dr. Carleton has reported her study of cosmetics to the British Medical Journal published in London.

Dr. Carleton does not deny that injurious effects have been observed from the use of cosmetics; indeed she quotes a rather formidable record of undesirable results, but with a suggestion that the harm is confined to rare cases, while harmless or even beneficial effects have gone unreported.

The statement, made on good authority, that cold creams and vanishing creams "block the sebaceous and sweat

glands" was tested experimentally, but could not be confirmed.

The belief that vanishing creams are drying to the skin was tested on 40 women, who, every night for four weeks in the spring, applied a standard vanishing cream to one cheek, leaving the other half of the face untreated for comparison. While in 24 of the 40 no change was discovered from the use of the cream, 12 found that the treated half of the face justified all the claims of the advertisers for smoothness while the cheeks that had had no cream were distinctly rougher. In only one case was a drying effect due to the cream evident.

One woman ended the experiment with both sides dryer than normal and promptly cured the condition with cold cream.

As to the argument that it is "unnatural" to anoint the skin with cosmetics reply is made that it is equally unnatural to treat the natural oils of the face with soap and water.

*Science News Letter, July 22, 1933*

## MEDICINE

### Great Hunger Features Newly-Discovered Disease

EXCESSIVE hunger is the chief symptom of a newly-recognized disease which Dr. Seale Harris of Birmingham, Ala., has just reported to the American Medical Association.

The disease, according to Dr. Harris, is the exact opposite of diabetes. While in diabetes the pancreas supplies too little insulin for the body's needs, in the new disease, the pancreas produces too much insulin for the body's normal needs. Consequently Dr. Harris calls the new disease hyperinsulinism.

Besides hunger, the patient may suffer from weakness, nervousness, tremors, sweating and mental lapses, Dr. Harris reported. In severe cases the mental lapses may be prolonged into unconsciousness and convulsions like those of epilepsy. Dr. Harris suggested that illnesses that have been diagnosed as epileptic attacks are sometimes the attacks associated with hyperinsulinism.

The most important factor leading to the development of the new disease seems to be inflammation of the pancreas, Dr. Harris' studies showed.

A diet low in carbohydrates and high in fats is advised by Dr. Harris for mild cases with surgical removal of part of the pancreas in more severe cases.

*Science News Letter, July 22, 1933*

## PSYCHIATRY

### More and Better Trained Psychiatrists Needed

BETTER TRAINED psychiatrists and more of them are urgently needed in this country to care for the growing number of patients suffering from nervous and mental diseases, Drs. Ralph A. Noble and Franklin G. Ebaugh of the National Committee for Mental Hygiene have found.

Their report of a two-year survey of the status of psychiatric education, financed by the Commonwealth Fund, the New York Foundation and the American Foundation for Mental Hygiene, was just made public.

An alarming rise in psychological quackery was noted. Factors suggested as responsible for this are the great increase of popular interest in the subject in recent years and the inadequacy of present-day medicine in dealing with mental and nervous diseases.

Lay persons are not qualified to practice psychiatry, the report pointed out, and even physicians need several years of special training before they are competent to handle patients requiring treatment for complex disorders of mind and nervous system. All physicians, however, should be trained while in medical schools to consider the patient as a whole, taking into account the physical, psychological and social reactions.

*Science News Letter, July 22, 1933*

## GENERAL SCIENCE

### Emergency Group Formed To Aid German Scholars

DECLARING that the ancient university traditions of freedom of learning and teaching are being challenged in Germany, an Emergency Committee in Aid of Displaced German Scholars has been formed to administer funds for rescuing so far as possible the intellectual refugees of the Hitler Nazi regime.

Dr. Livingston Farrand, president of Cornell University, is chairman and Dr. Stephen Duggan, director of the Institute of International Education, is secretary, with offices at 2 West 45th St., New York City.

Twenty-seven other leaders in university life are joining actively in this university protest which has nothing to do with other groups having religious, racial, economic or other affiliations.

*Science News Letter, July 22, 1933*

BIOLOGY-GEOLOGY

# "Wallace's Line"

## "A Classic of Science"

### Former Extent of the Pacific and Asiatic Continents Is Indicated by Distribution of Malasian Animal Life

#### PART TWO

ON THE ZOOLOGICAL GEOGRAPHY OF THE MALAY ARCHIPELAGO. By Alfred R. Wallace. Communicated by Charles Darwin. Read Nov. 3rd, 1859. Published in the *Journal of the Proceedings of the Linnean Society (Zoology)*, Vol. IV. London: Longman, Green, Longmans and Roberts, and Williams and Norgate. 1860. This is an exact reprint of the original publication.

THE GREAT Pacific continent, of which Australia and New Guinea are no doubt fragments, probably existed at a much earlier period, and extended as far westward as the Moluccas. The extension of Asia as far to the south and east as the Straits of Macassar and Lombok must have occurred subsequent to the submergence of both these great southern continents; and the breaking up and separation of the islands of Sumatra, Java, and Borneo has been the last great geological change these regions have undergone. That this has really taken place as here indicated, we think is proved by the following considerations. Not more than twenty (probably a smaller number) out of about one hundred land birds of Celebes at present known are found in Java or Borneo, and only one or two of twelve or fifteen Mammalia. Of the Mammalia and birds of Borneo, however, at least three-fourths, probably five-sixths, inhabit also Java, Sumatra, or the peninsula of Malacca. Now, looking at the direction of the Macassar Straits running nearly north and south, and remembering we are in the district of the monsoons, a steady south-east and north-west wind blowing alternately for about six months each, we shall at once see that Celebes is more favourably situated than any other island to receive stray passengers from Borneo, whether drifted across the sea or wafted

through the air. The distance too is less than between any of the other large islands; there are no violent currents to neutralize the action of the winds; and numerous islets in mid-channel offer stations which might rescue many of the wanderers, and admit, after repose, of fresh migrations. Between Java and Borneo the width of sea is much greater, the intermediate islands are fewer, and the direction of the monsoons along and not across the Java sea, accompanied by alternating currents in the same direction, must render accidental communication between the two islands exceedingly difficult; so that where the facilities for intercommunication are greatest, the number of species common to the two countries is least, and *vice versa*. But again, the mass of the species of Borneo, Java, &c., even when not identical are congeneric, which, as before explained, indicates identity at an earlier epoch; whereas the great mass of the fauna of Celebes is widely different from that of the western islands, consisting mostly of genera, and even of entire families, altogether foreign to them. This clearly points to a former total diversity of forms and species,—existing similarities being the result of intermixture, the extreme facilities for which we have pointed out. In the case of the great western islands a former more complete identity is indicated, the present differences having arisen from their isolation during a considerable period, allowing time for that partial extinction and introduction of species which is the regular course of nature. If the very small number of western species in Celebes is all that the most favourable conditions for transmission could bring about, the complete similarity of the faunas of the western islands could never (with far less favourable conditions) have been produced by the same means. And what other means can we conceive but the former connexion of those islands with

each other and with the continent of Asia?

In striking confirmation of this view we have physical evidence of a very interesting nature. These countries are in fact *still connected*, and that so completely that an elevation of only 300 feet would nearly double the extent of tropical Asia. Over the whole of the Java Sea, the Straits of Malacca, the Gulf of Siam, and the southern part of the China Sea, ships can anchor in less than fifty fathoms. A vast submarine plain unites together the apparently disjointed parts of the Indian zoological region, and abruptly terminates, exactly at its limits, in an unfathomable ocean. The deep sea of the Moluccas comes up to the very coasts of Northern Borneo, to the Strait of Lombok in the south, and to near the middle of the Strait of Macassar. May we not therefore from these facts very fairly conclude that, according to the system of alternate bands of elevation and depression that seems very generally to prevail, the last great rising movement of the volcanic range of Java and Sumatra was accompanied by the depression that now separates them from Borneo and from the continent?

It is worthy of remark that the various islands of the Moluccas, though generally divided by a less extent of sea, have fewer species in common; but the separating seas are in almost every case of immense depth, indicating that the separation took place at a much earlier period. The same principle is well illustrated by the distribution of the genus *Paradisaea*, two species of which (the common Birds of Paradise) are found only in New Guinea and the islands of Aru, Mysol, Waigou, and Jobie, all of which are connected with New Guinea by banks of soundings, while they do not extend to Ceram or the Ké Islands, which are no further from New Guinea, but are separated from it by deep sea. Again, the chain of small volcanic islands to the west of Gilolo, though divided by channels of only ten or fifteen miles wide, possess many distinct representative species of insects, and even, in some cases, of birds also. The Baboons of Batchian have not

passed to Gilolo, a much larger island, only separated from it by a channel ten miles wide, and in one part almost blocked up with small islands.

Now looking at these phenomena of distribution, and especially at those presented by the fauna of Celebes, it appears to me that a much exaggerated effect, in producing the present distribution of animals, has been imputed to the accidental transmission of individuals across intervening seas; for we have here as it were a test or standard by which we may measure the possible effect due to these causes, and we find that, under conditions perhaps the most favourable that exist on the globe, the percentage of species derived from this source is extremely small. When my researches in the Archipelago are completed, I hope to be able to determine with some accuracy this numerical proportion in several cases; but in the mean time we will consider 20 per cent. as the probable maximum for birds and mammals which in Celebes have been derived from Borneo or Java.

Let us now apply this standard to the case of Great Britain and the Continent, in which the width of dividing sea and the extent of opposing coasts are nearly the same, but in which the species are almost all identical,—or to Ireland, more than 90 per cent. of whose species are British—and we shall at once see that no theory of transmission across the present Straits is admissible, and shall be compelled to resort to the idea of a very recent separation (long since admitted), to account for these zoological phenomena.

It is, however, to the oceanic islands that we consider the application of this test of the most importance. Let any one try to realize the comparative facilities for the transmission of organized beings across the Strait of Macassar from Borneo to Celebes, and from South Europe or North Africa to the island of Madeira, at least four times the distance, and a mere point in the ocean, and he would probably consider that in a given period a hundred cases of transmission would be more likely to occur in the former case than one in the latter. Yet of the comparatively rich insect-fauna of Madeira, 40 per cent. are continental species; and of the flowering plants more than 60 per cent. The Canary Islands offer nearly similar results. Nothing but a former connexion with the Continent will explain such an amount of specific identity (the weight of which will be very much increased if

we take into account the representative species); and the direction of the Atlas range towards Teneriffe, and of the Sierra Nevada towards Madeira, are material indications of such a connexion.

The Galapagos are no further from South America than Madeira is from Europe, and, being of greater extent, are far more liable to receive chance immigrants; yet they have hardly a species identical with any inhabiting the American continent. These islands therefore may well have originated in mid-ocean; or if they ever were connected with the mainland, it was at so distant a period that the natural extinction and renewal of species has left not one in common. The character of their fauna, however, is more what we should expect to arise from the chance introduction of a very few species at distant intervals; it is very poor; it contains but few genera, and those scattered among unconnected families; its genera often contain several closely allied species, indicating a single antitype.

The fauna and flora of Madeira and of the Canaries, on the other hand, have none of this chance character. They are comparatively rich in genera and species; most of the principal groups and families are more or less represented; and, in fact, these islands do not differ materially, as to the general character of their animal and vegetable productions, from any isolated mountain in Europe or North Africa of about equal extent.

On exactly the same principles, the very large number of species of plants, insects, and birds, in Europe and North America, either absolutely identical or represented by very closely allied species, most assuredly indicates that some means of land communication in temperate or sub-arctic latitudes existed at no very distant geological epoch; and though many naturalists are inclined to regard all such views as vague and unprofitable speculations, we are convinced that they will soon take their place among the legitimate deductions of science.

Geology can detect but a portion of the changes the surface of the earth has undergone. It can reveal the past history and mutations of what is now dry land; but the ocean tells nothing of her bygone history. Zoology and Botany here come to the aid of their sister science, and by means of the humble weeds and despised insects inhabiting its now distant shores, can discover some of those past changes which the ocean itself refuses to reveal. They can indicate, approximately at least, where and



ALFRED RUSSELL WALLACE  
1823-1913

*contemporary, professional rival and personal friend of Charles Darwin, whose specialty was the results of environment on island life.*

at what period former continents must have existed, from what countries islands must have been separated, and at how distant an epoch the rupture took place. By the invaluable indications which Mr. Darwin has deduced from the structure of coral reefs, by the surveys of the ocean-bed now in progress, and by a more extensive and detailed knowledge of the geographical distribution of animals and plants, the naturalist may soon hope to obtain some idea of the continents which have now disappeared beneath the ocean, and of the general distribution of land and sea at former geological epochs.

Most writers on geographical distribution have completely overlooked its connexion with well-established geological facts, and have thereby created difficulties where none exist. The peculiar and apparently endemic faunae and floras of the oceanic islands (such as the Galapagos and St. Helena) have been dwelt upon as something anomalous and inexplicable. It has been imagined that the more simple condition of such islands would be to have their productions identical with those of the nearest land, and that their actual condition is an incomprehensible mystery. The very reverse of this is however the case. We really require no speculative hypothesis, no new theory, to explain these phenomena; they are the logical results of well-known laws of nature. The reg-



ular and unceasing extinction of species, and their replacement by allied forms, is now no hypothesis, but an established fact; and it necessarily produces such peculiar faunas and floras in all but recently formed or newly disrupted islands, subject of course to more or less modification according to the facilities for the transmission of fresh species from adjacent continents. Such phenomena therefore are far from uncommon. Madagascar, Mauritius, the Moluccas, New Zealand, New Caledonia, the Pacific Islands, Juan Fernandez, the West India Islands, and many others, all present such peculiarities in greater or less development. It is the instances of identity of species in distant countries that presents the real difficulty. What was supposed to be the more normal state of things is really exceptional and requires some hypothesis for its explanation. The phenomena of distribution in the Malay Archipelago, to which I have here called attention, teach us that, however narrow may be the strait separating an island from its continent, it is still an impassable barrier against the passage of any considerable number and variety of land animals; and that in all cases in which such islands possess a tolerably rich and varied fauna of species mostly identical, or closely allied with those of the adjacent country, we are forced to the conclusion that a geologically recent disruption has taken place. Great Britain, Ireland, Sicily, Sumatra, Java and Borneo, the Aru Islands, the Canaries and Madeira are cases to which the reasoning is fully applicable.

In his introductory Essay on the Flora of New Zealand Dr. Hooker has most convincingly applied this principle to show the former connexion of New Zealand and other southern islands with the southern extremity of America; and I will take this opportunity of calling the attention of zoologists to the very satisfactory manner in which this view clears away many difficulties in the distribution of animals. The most obvious of these is the occurrence of Marsupials in America only, beyond the Australian region. They evidently entered by the same route as the plants of New Zealand and Tasmania which occur in South temperate America, but having greater powers of dispersion, a greater plasticity of organization, have extended themselves over the whole continent though with so few modifications of form and structure as to point to a unity of origin at a comparatively recent pe-

riod. It is among insects, however, that the resemblances approach in number and degree to those exhibited by plants. Among Butterflies the beautiful *Heliconidae* are strictly confined to South America, with the exception of a single genus (*Hamadryas*) found in the Australian region from New Zealand to New Guinea. In Coleoptera many families and genera are characteristic of the two countries; such are *Pseudomorphidae* among the Geodephaga, *Lamproididae* and *Synsidesidae* among the Lucani, *Anoplognathidae* among the Lamellicornes, *Stigmoderidae* among the Buprestes, *Natalis* among the Cleridae, besides a great number of representative genera. This peculiar distribution has hitherto only excited astonishment, and has confounded all ideas of unity in the distribution of organic beings; but we now see that they are in exact accordance with the phenomena presented by the flora of the same regions, as developed in the greatest detail by the researches of Dr. Hooker.

It is somewhat singular, however, that not one identical species of insect should yet have been discovered, while no less than 89 species of flowering plants are found both in New Zealand and South America. The relations of the animals and of the plants of these countries must necessarily depend on the same physical changes which the Southern hemisphere has undergone; and we are therefore led to conclude that insects are much less persistent in their specific forms than flowering plants, while among Mammalia and land birds (in which no genus even is common to the countries in question) species must die and be replaced much more rapidly than in either. And this is exactly in accordance with the fact (well established by geology) that at a time when the shells of the European seas were almost all identical with species now living, the

European Mammalia were almost all different. The duration of life of species would seem to be in an inverse proportion to their complexity of organization and vital activity.

In the brief sketch I have now given of this interesting subject, such obvious and striking facts alone have been adduced as a traveller's note-book can supply. The argument must therefore lose much of its weight from the absence of detail and accumulated examples. There is, however, such a very general accordance in the phenomena of distribution as separately deduced from the various classes or kingdoms of the organic world, that whenever one class of animals or plants exhibits in a clearly marked manner certain relations between two countries, the other classes will certainly show similar ones, though it may be in a greater or a less degree. Birds and insects will teach us the same truths; and even animals and plants, though existing under such different conditions, and multiplied and dispersed by such a generally distinct process, will never give conflicting testimony, however much they may differ as regards the amount of relationship between distant regions indicated by them, and consequently notwithstanding the greater or less weight either may have in the determining of questions of this nature.

This is my apology for offering to the Linnean Society the present imperfect outline in anticipation of the more detailed proofs and illustrations which I hope to bring forward on a future occasion.

Science News Letter, July 22, 1933

Hungarian women in Baranya county used to wear hoods of some eight different colors, representing their ages, and it was considered disgraceful for a woman to wear a color not correct for her age group.



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## GENERAL SCIENCE

# Public Works Funds Go To Brawn, Not Brains

**Most of the Four Millions Allotted to Scientific Bureaus Will Be Spent on Buildings, Not Research**

OF THE \$64,561,542 of public works funds just allotted to 35 governmental agencies, \$4,255,592 is distributed to scientific bureaus.

But this first assignment of public works funds will do little to compensate for the severe reductions of federal scientific research funds that have been made in the name of "economy." Most of the funds will be spent on labor and building material to repair and recondition the buildings and laboratories that are used by Uncle Sam's scientists. In some cases, the public works funds will place laboring men at work upon buildings whose laboratories are reduced in scientific staff because of furloughs, dismissals or separation from the federal service.

The avowed intention of these public works grants is to put unemployed labor to work, not to restore to fruitful research activities the hundreds of Uncle Sam's faithful scientists who have felt the economy axe.

Those administering scientific work are hopeful that future distributions by the Federal Emergency Administration of Public Works will make some provision for the continuance of useful researches that have been stopped by economy measures in many bureaus. It is known that estimates have been submitted and it is realized that preference was given in the first list of approvals to projects that will employ as many hours of labor as possible.

The sum of \$2,060,154 was allocated the Department of Agriculture and ten of its bureaus. Of this amount, \$345,800 is for repairs to buildings in Washington.

In the Department of Commerce, the Bureau of Standards received \$100,000 for repairs to its Washington plant. The Aeronautics Branch received \$443,000 for relocating and improving air beacons and airway radio facilities throughout the country, but none of this grant can be used for research, jeopardized by economy, that promises to save many times that amount in the

future through the development of better methods of utilizing radio on the airways. Bureau of Fisheries was allocated \$150,000 for reconditioning and repairing hatcheries, buildings and vessels.

The U. S. Geological Survey was given \$1,200,000 to be used largely for the repair of existing stream gauging stations. No funds were made available for topographic mapping, geological work or the Alaskan resources work, although estimates for these had been submitted.

The National Advisory Committee for Aeronautics received \$200,000 which will be used to make needed repairs on its laboratory buildings at its Langley Field, Va., experimental plant.

The U. S. Public Health Service received \$102,438 to be used largely for reconditioning vessels used for quarantine purposes.

*Science News Letter, July 22, 1933*

## MEDICINE

## Foot and Mouth Disease May Invade Through Nose

CATTLE may get foot-and-mouth disease by inhaling the virus of the disease through their noses. Experiments suggesting that this is a possibility have just been reported to Science by Drs. Peter K. Olitsky, Herald R. Cox and Jerome T. Syverton of the Rockefeller Institute for Medical Research.

The Rockefeller scientists were investigating a very similar disease of horses, vesicular stomatitis. They found that mice could be infected with this latter disease when the causative virus was dropped into the animals' nostrils, and that very minute amounts of the virus can produce disease.

Since the disease can be produced by nasal infection in the laboratory, the scientists are wondering whether both vesicular stomatitis and the closely related foot-and-mouth disease cannot be spread by the same route in the field.

*Science News Letter, July 22, 1933*



BOTANY



**Honey Mushroom**

MOST of us are distrustful of mushrooms, calling every fungus that we do not know a "toadstool." As a matter of fact, most of our mistrust is wasted, for there are only a few species of mushroom that are dangerously poisonous, a few more that are "tummy-achers," and a good many are inedible because of toughness or ill flavor. And "toadstool" is not a poison-name, but merely a shape-name. An edible mushroom is an edible toadstool; an inedible or poisonous toadstool is an inedible or poisonous mushroom. Anything with a stalk and cap may properly be called either toadstool or mushroom.

One of the best of these little-known and hence often suspected "toadstools" is the honey mushroom. You will find it growing freely in the moist woods, either springing from the ground or, more frequently, from the roots or trunks of a tree. It has an attractively glistening cap, yellow as new honey. It is not sweet like honey, but most attractively and piquantly "mushroomy." Its flesh is firm, perhaps a trifle firmer than that of the field agaric commonly cultivated and sold in the market, so that it will stand the handling it gets in cooking and still not break up too much.

Although it is very good eating, the honey mushroom is an expensive luxury. It is expensive even if you take a basket and gather it "free for nothing" in the woods. For it is often, perhaps usually, a parasite on living trees, and is one of the most destructive of the fungi that prey on our standing timber.

*Science News Letter, July 22, 1933*

Neither of the two places vying for fame as "the hottest place in the world"—Death Valley, California, and Azizia, Africa—is in the tropics.

GENERAL SCIENCE

# Conference Assays Diffusion of World's Scientific Knowledge

Science Service Gathering Addressed by Drs. Bohr, Millikan, Aston, Bottazzi, Dufrénoy, Ritter and Howell

**L**EADING foreign and American scientists joined with Science Service in its conference on the diffusion of scientific knowledge which was a part of the recent meeting of the American Association for the Advancement of Science at Chicago.

Taking advantage of the presence of eminent foreign scientists at the meeting as guests of Chicago's Century of Progress Exposition, Science Service asked a number of them to assay the status of science dissemination in their own countries and to evaluate various techniques. The conference held at a luncheon (June 23) was attended by 180 men and women of science, members of the press and other interested persons.

In his capacity of President of Science Service, Dr. J. McKeen Cattell, the psychologist who is editor of the journal *Science*, and chairman of the A.A.A.S. executive committee, presided.

Dr. Cattell introduced, as first speaker, Dr. William Emerson Ritter of the University of California, Honorary President of Science Service.

Dr. Ritter prefaced his remarks with a denial that he was the originator of Science Service. The idea of Science Service, he said, really came entirely from the mind of the late E. W. Scripps. Science Service is therefore an institu-

tion for the popular dissemination of science fathered by a layman. It was always Mr. Scripps' idea that democracy must be intelligent if it is to be successful. This idea underlay his whole life work of building up a great press organization devoted to placing all manner of information in the hands of the common people at the lowest possible prices.

## Origin of Science Service

Mr. Scripps first proposed an agency for the popularization of knowledge in economics and the other social sciences. Not meeting the responses he expected on the part of economists, he modified the original idea to envisage an institution for the popularization of knowledge in the physical and natural sciences. It was his idea that this organization should be completely independent of his other, more strictly business ventures. The scientists of this country understood the possibilities behind this idea when it was presented to them by Dr. Ritter, and promised their cooperation in carrying it out. Thus Science Service was born.

Prof. Niels Bohr, of the University of Copenhagen, was the second speaker. Popular dissemination of scientific knowledge, though a completely accepted idea in Denmark now, has not

always enjoyed so favorable a position, he said. Tycho Brahe, Denmark's first great modern scientist, had to suffer many inconveniences and difficulties before he received royal support; and after his great patron died and Brahe left his native land, his observatory, the most notable institution of its kind in his century, was literally demolished within twenty years, peasants carrying away the stones of its walls.

Science has fared better, however, in modern Denmark. Over a hundred years ago Oersted, impressed by the work of the British Royal Institution when he visited London, founded a polytechnic school in Copenhagen. Oersted, a giant among his contemporaries, conducted a one-man revolution in scientific education and popularization, and the whole direction of Danish popular instruction in science received its subsequent direction from him.

About fifty years ago an intense national spiritual movement swept over Denmark: a combination of a renaissance in Norse culture and popular religion. One of the fruits of this culture movement was the establishment of a new system of high schools, in which science teaching received great emphasis; and this scientific training of the people in turn had great influence on their social institutions. Since it Denmark the dissemination of popular knowledge in science is largely taken care of by the schools, including the extension courses, theories of teaching, and the theories of knowledge behind them, are matters of great importance and much discussed.

## Loss of Freedom

Prof. Bohr closed by expressing his regrets over the situation in "some of our neighboring countries," and the hope that the loss of freedom of expression of thought in these lands may be only temporary.

Prof. F. W. Aston of Cambridge University was the third speaker, replacing on the program his colleague, Prof. Joseph Barcroft, who was unable to be present.

The publication of scientific results in Great Britain, Prof. Aston reported, requires three distinct types of periodicals: (1) those for brief preliminary papers, like *Nature*, (2) those for the full publication of scientific results, like the *Proceedings of the Royal Society*, and (3) abstracting journals like *Science Abstracts*. Journals of the type of *Nature*

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ture are necessarily more or less popular, and the degrees of popularization range through a long scale. Newspapers are now adding science to their former somewhat monotonous offerings of crime and politics, and much of the science material offered in the daily press is well written and has content of genuine merit. Popularization of science in England is no new thing; many noted English men of science in the last century lectured and wrote for popular audiences; Prof. Aston cited such men as Tyndall, Faraday and Kelvin.

Prof. Filippo Bottazzi, of the Physiological Institute of Naples, and editor of *Scientia*, outlined the means for the dissemination of science in present-day Italy. Science dissemination in Italy, he said, has a two-fold object: (1) to present scientific information to specialists, who are likewise laymen in every science except their own, and (2) to lead people, so far as possible, to understand the aims and achievements of modern science.

The task of disseminating special scientific knowledge is taken care of by the Italian National Research Council, through its publications, *La Ricerca Scientifica*, for full publication, and *Bibliografia Italiana*, for bibliography and abstracting. A special department for technical information has also been founded for the special benefit of industrialists and technologists. Each year Senator Marconi delivers an address at the meeting of the Italian Association for the Advancement of Science, in which he summarizes the progress of Italian and foreign science during the preceding twelvemonth. The published Proceedings of the Association carry a full report of this address.

### International Review

The international review *Scientia* was founded in Italy and is still edited in that country by Italians; it may therefore in a sense be considered a part of the Italian effort toward the dissemination of science. It is aimed particularly at "people of middle culture," and is therefore written in a form acceptable to educated but not necessarily scientific persons.

Every two years a Volta Congress is held under the auspices of the Royal Academy of Italy, with one predetermined specific scientific problem on its agenda, which receives a thorough discussion.

Special publications, cinema films, and other means are used to instruct

the people in science and in some of its applications, such as nutrition. The daily press now publishes articles by leading men of science, some of the journals periodically printing whole science pages.

In conclusion, Prof. Bottazzi announced the pending publication in Italy of a special review devoted to science.

Prof. Jean Dufrenoy, director of the Station of Agricultural Pathology, Brive, France, outlined the means used in his country for the dissemination of science. Outstanding are the various *Comptes Rendus*, of the French Academy, of the Biological Society, and of other organizations. The French Biological Society has branches in many cities in France, as well as in the Latin countries of Europe and South America, and even in Japan. Besides the *Comptes Rendus* for complete scientific publication, there are numerous *Revue*s, each covering a particular discipline in science. Further dissemination of science in France is achieved through the meetings of many scientific societies, especially of the French Association for the Advancement of Science, through lectures, symposia, motion pictures, and special demonstrations by scientific institutions.

### Expansion Urged

The significance of science popularization was briefly discussed by Prof. Dufrenoy. He said:

"The diffusion of scientific knowledge helps each mind to build a clear representation of the familiar natural phenomena.

"The diffusion of scientific knowledge therefore should bring the mind of the well learned and the mind of the less learned into a closer communion nearer to truth.

"The diffusion of scientific knowledge is successful so far as it supplies each mind with the missing link, the link which chains on the sequence of events from the familiar observed phenomena back to the causes. These causes each of us feel more or less consciously to operate.

"But the diffusion of scientific knowledge chiefly has an emotional significance. More important than exposing the actual facts and new theories is making the people who have no access and no business in the laboratories feel the thrill of what research means.

"This we believe that Science Service did and does achieve.

"We therefore wish to see its activity

expanded, that the world over men be both tolerant with the limitations of the scientific control of undesirable natural events and rationally confident in the possibilities of the next century of scientific progress."

Dr. Robert Andrews Millikan, chairman of the executive council of the California Institute of Technology, spoke as the representative of American science. He held that scientists themselves should be trained to express themselves in condensed and popular language, not only for the education of the public but for their own benefit in clarifying their thinking and better expressing their own special knowledge.

### Public Must Be Won

In a democratic country, Prof. Millikan continued, public support must be won if science is to go on. Public judgment of value is in the last analysis the final verdict. The education of the public is its largest social problem. To handle it from a more rational and less emotional point of view, people must be given at least the beginnings of a knowledge of the scientific method. This method must be expected eventually to penetrate even into politics.

A third point raised by Prof. Millikan was the inevitability of the popularization of science in the United States. The press, he said, is going to present science in some way or other. Science Service has done great work, he said, in showing that science can be presented in a manner understandable by the people and in a style which will induce them to desire to read articles on science. This work of Science Service has had its influence on the handling of science material by the press generally, until now it often happens that a reporter will make a better precis of a scientist's address or paper than the scientist could himself.

The discussion was closed by Dr. W. H. Howell, Chairman of the Executive Committee of Science Service. Science has long been adequately presented to specialists and to the educated public generally, he said, but the need has been for a good presentation for the mass of the people at large, whose whole source of information is the newspaper. This is the task which Science Service has undertaken; and in spite of difficulties the experiment seems to be succeeding.

The City of Chicago, through Mayor Edward J. Kelly, sent a message of cordial welcome to the conference.

*Science News Letter, July 22, 1933*

# •First Glances at New Books

## Travel

**A PHYSICIAN'S TOUR IN SOVIET RUSSIA**—Sir James Purves-Stewart—*Stokes*, 175 p., \$1. While giving a vivid picture of Soviet Russia, this book by an eminent English physician is written in the factual, unprejudiced style of a scientist, so that one feels sure the picture is accurate as well as vivid. Although the author finds Russia a dull, drab place, his book is far from being either dull or drab. Naturally he was interested in hospitals and medical practice, but the book contains so much that is not medical, it is sure to interest a wide group of lay readers as well as physicians.

*Science News Letter, July 22, 1933*

## Forestry-Economics

**FORESTRY AN ECONOMIC CHALLENGE**—Arthur Newton Pack—*Macmillan*, 161 p., \$1.25. Mr. Pack's plea for re-thinking forestry from a scientific and economic viewpoint is timely in view of the extensive reforestation work of President Roosevelt's Civilian Conservation Corps. The book is written for a popular audience.

*Science News Letter, July 22, 1933*

## Bacteriology

**MAN'S MICROBIC ENEMIES**—D. Stark Murray—*Watts and Co.*, 53 p., 7d. This small book, one of the Forum Series, gives a remarkably clear explanation of the mysteries of the bacteriological laboratory. The author tells most simply just how the bacteriologist proceeds with his work of identifying disease germs, growing and studying them. He explains the theory of how germs cause disease and tells a good deal about the germs and viruses, both harmful and helpful to man.

*Science News Letter, July 22, 1933*

## Chemistry

**THERAPEUTIC AGENTS OF THE QUINOLINE GROUP**—W. F. von Oettingen—*Chemical Catalog Co.*, 301 p., \$6. One of the American Chemical Society Monograph Series. Quinine is one of the quinoline derivatives.

*Science News Letter, July 22, 1933*

## Health Education

**AN EVALUATION OF SCHOOL HEALTH PROCEDURES**—Raymond Franzen—*American Child Health Association*, 127 p., paper, 90c., cloth \$1.15. This is the fifth of the School Health Research Monographs. Although

avowedly written for the non-statistical reader the monograph seems to this non-statistical reader to be full of charts, tables and figures. It will doubtless be useful to educators. The summary volume which is promised for the conclusion of the series will perhaps give a clearer idea to the lay reader of what results may be obtained from school health procedures.

*Science News Letter, July 22, 1933*

## Physics

**INTRODUCTION TO THEORETICAL PHYSICS**—Max Planck, translated by Henry L. Brose—*Macmillan and Co. Ltd.*

Vol. I: General Mechanics, \$2.50. Vol. II: The Mechanics of Deformable Bodies, \$2.50. Vol. III: Theory of Electricity and Magnetism, \$2.50. Vol. IV: Theory of Light, \$2.50. Vol. V: Theory of Heat, \$2.75.

These five volumes present in the words of a master theoretical aspects of physics. They are not popular and are replete with detail that makes them valuable for advanced instruction and reference.

*Science News Letter, July 22, 1933*

## Geology-Engineering

**THE STORY OF COAL**—John A. Maloney—*Museum of Science and Industry*, 103 p., 15c. A guide book for the model mine and coal exhibits at the new Museum of Science and Industry in Chicago, into which the principal facts about our principal fuel have been interwoven in a most attractive manner.

*Science News Letter, July 22, 1933*

## Language

**BASIC ENGLISH APPLIED (SCIENCE)**—C. K. Ogden—*Kegan Paul, Trench, Trubner & Co., London*, 88 p., 2s 6d. Mr. Ogden, inventor and protagonist of simplified English as an international language, in this book applies basic English to science and demonstrates how typical scientific papers can be rendered in 850 words of general vocabulary plus 150 additional scientific words.

*Science News Letter, July 22, 1933*

## Agriculture

**YEARBOOK OF AGRICULTURE, 1933**—ed. Milton S. Eisenhower—*Government Printing Office*, 789 p., \$1. Unlike previous yearbooks, the latest scientific achievements of the department are presented in greatly condensed description as a part of the Secretary's annual report to the President. The bulk of this year's report is devoted to describing the agricultural effects of the depression and to summarizing recent developments in farm practice. The Secretary's report is, however, an excellent brief for the continuance without curtailment of the scientific research activities of the department.

*Science News Letter, July 22, 1933*

## General Science

**FROM CAVE-MAN TO ENGINEER**—Waldemar Kaempffert—*Museum of Science and Industry*, 131 p., 50c. A guide book to the newest of America's great museums, well written by a master of science popularization, and as well illustrated.

*Science News Letter, July 22, 1933*

## Geology

**GEOLOGY OF CALIFORNIA**—Ralph D. Reed—*American Association of Petroleum Geologists*, 355 p., \$5. Chief geologist of the Texas Company (California) in this book sketches stratigraphy, structure and geologic history of California, with particular reference to post-Triassic events in the coastal province. Some of the major unsolved problems of California geology are brought into relief.

*Science News Letter, July 22, 1933*

## Electricity-Radio

**TELLING THE WORLD**—George O. Squier—*Williams & Wilkins*, 163 p., \$1. The rise of electricity and magnetism and the development of telegraph, telephone and radio is told in this volume of the Century of Progress series by the former chief signal officer of the U. S. Army. General Squier has performed a useful service in putting in writing the story of electrical communication authoritatively and interestingly.

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